CROP URBANIS

Crop Urbanis Intelligence Layer - Technical Brief

Expert-reviewed AI/data decision-support MVP for controlled-environment agriculture.

Product narrative

It is designed to structure project inputs, retrieve agronomic knowledge, support feasibility modelling, generate SOP and training material, track operational KPIs and assist expert-reviewed diagnostics for greenhouse and vertical-farm teams. AI outputs support professional judgment and are reviewed against crop biology, facility constraints, climate context, market assumptions and operational reality.

Inputs the system is designed to structure

- Site layouts and available growing area
- Utility capacity, energy assumptions and water constraints
- Crop targets, cultivar choices and production cycles
- Historical yield, quality and loss data when available
- Nutrient, fertigation, climate and lighting protocols
- Labour, CAPEX/OPEX and market assumptions
- Pest, disease and post-harvest observations
- Supplier, equipment and automation documentation
- Regulatory, safety and compliance constraints
- Training materials and farm SOPs

Outputs for operators and project teams

- Feasibility model inputs and scenario summaries
- Crop protocol drafts and SOP updates
- KPI dashboards for yield, quality, labour, energy and stability
- Expert-reviewed crop and operations diagnostics
- Multilingual training material for farm teams
- Structured due-diligence packs for investors and developers
- Commissioning and scale-up checklists
- Data-ready reports for pilots, research partners and suppliers

Pilot-ready modules

Farm and project data model

Structures site layouts, utility capacity, crop targets, budget assumptions, regulations, facility specs and operating constraints into reusable project records.

Feasibility and scenario support

Supports CAPEX/OPEX assumptions, crop planning, production cycles, labour, energy and market scenarios for investor-ready decision packs.

Crop protocol assistant

Helps draft and update crop protocols, fertigation notes, IPM checklists and operational recommendations for expert review.

SOP and training generator

Turns project-specific protocols into multilingual SOPs, checklists, troubleshooting guides and training material for greenhouse and vertical-farm teams.

KPI dashboard layer

Tracks operational indicators such as yield, quality, cycle length, labour, energy, crop losses, issue frequency and optimisation actions.

Computer-vision and sensing validation

Tests whether images, sensors and environmental logs can support crop monitoring, anomaly detection and operational alerts under controlled validation conditions.

Model evaluation and guardrails

Compares AI outputs against agronomic ground truth, expert corrections, field results and acceptance criteria before use in client-facing workflows.

Cloud-ready deployment

Uses cloud infrastructure for secure hosting, structured storage, APIs, dashboards, inference, document processing, monitoring, logging, backups and partner collaboration.

AI and cloud workflows

Agronomic knowledge retrieval

Retrieves relevant crop, climate, nutrition, IPM and operations knowledge from curated project materials and validated sources.

SOP and training generation

Drafts multilingual training guides, checklists and operating procedures for expert review.

Feasibility and scenario support

Structures assumptions for CAPEX/OPEX, crop planning and production scenarios.

KPI dashboarding

Turns farm and project information into measurable indicators for post-launch optimisation.

Computer vision and sensing validation

Tests image and sensor workflows for crop monitoring, anomaly detection and operational alerts where useful.

Model evaluation and guardrails

Compares outputs against agronomic ground truth, expert review and field results before client-facing use.

Technical architecture under development

- Project data + farm files + protocols + sensor/image inputs
- Validation and schema mapping
- Agronomic knowledge base
- AI inference + rule-based checks
- Expert review
- Dashboard / SOP / diagnostics / feasibility report
- Pilot feedback and model improvement

Why cloud and AI infrastructure matters

Cloud and AI infrastructure supports secure hosting, structured data storage, API services, dashboards, document processing, model inference, knowledge retrieval, image and sensor analysis, logging, monitoring, backups, model evaluation and pilot collaboration environments.

Human-in-the-loop | Pilot-ready workflows | EU-aware data handling | Expert-reviewed outputs

MVP roadmap and current status

Live foundation

Consulting, field agronomy, SOP/training, feasibility, project data collection, research support and operational optimisation.

Pilot-ready with selected partners

Data structuring, KPI dashboards, AI-assisted SOP/training, agronomic knowledge retrieval, diagnostics support and model evaluation workflows.

Validated case by case

Computer vision, sensing integrations, automated alerts and broader deployment depend on data quality, partner scope, crop context and expert-review requirements.

How the product fits the business

The intelligence layer is being developed as a project-embedded product for selected pilots. It supports consulting, research, training and operator dashboards today, while selected modules may later become managed digital workflows, pilot access packages or licensed decision-support tools for greenhouse operators, vertical-farm developers, suppliers and research partners.

MVP changelog

June 2026 - Website technology layer published

Public narrative, module map, architecture, cloud needs, business model and collaboration path documented.

Private pilot phase - Selected partner workflows

Data structuring, SOP/training generation, dashboards, retrieval and model-evaluation workflows are scoped case by case.

Next validation track - Sensing, image and diagnostic modules

Computer-vision, sensing integrations and automated alerts remain validation tracks tied to data quality and expert-review requirements.